d. Part of a bipolar cell showing rows of drops and rods, as well as several large drops of the blackened substance. A few very pale areas are visible in the protoplasm.

e. Part of bipolar cell showing central core of substance stained black, which at one end of the figure is resolved into a bundle of parallel rows of black dots and rods. There is a relatively large amount of swollen rather refractive protoplasm peripherally placed, which is free from Degeneratio micans.

f. A small bundle of interrupted black lines of the stained glistening substance embedded apparently in a common ground mass of protoplasm,

g. A complex of sections of fibres of various sizes running in different directions. Fusiform masses of the black substance distinctly visible in some of them.

h. Cross section of a rather large bipolar cell showing transverse sections of the longitudinal rows of masses of the blackened Degeneratio micans.

k. Large refractive mass containing particles of the blackened glistening substance. The protoplasm has apparently "run" into this form.

l, m. Sections of swollen bipolar cells containing sections of pale masses. Inside the latter are seen irregularly distributed droplets of the blackened glistening substance.

n. Two very fine fibres, both taken from a part in which all the elements in the tissue are swollen. One of the fibres is free from, the other contains, the substance which stains black in Weigert-Pal.

o. A rather fine fibre, showing fragments of the blackened substance. The upper thickened end of the fibre is seen in cross sections and on the cut surface is seen a central core, which consists of a homogeneous fused mass of the blackened glistening substance.

A CASE OF LYMPHATIC LEUKÆMIA COMBINED WITH PULMONARY TUBERCULOSIS.

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REFERENCES to the combination of leukæmia with tuberculosis are not common in the literature of either disease in a careful review that we have made of the subject. Moreover, the distinctly lymphatic variety of leukæmia alone is uncommon, as well as the slow course apparently run by this case whose history of the enlarged lymph-nodes covers nearly two years.

Volpe[30] reports two cases and reviews six from previous records. Cases are described by Quincke and Stintzing, which are mentioned by Lichtheim,[1] who also had one of the splenic-myelogenous variety, terminating with acute tuberculosis. Musser[2] and Sailer found a healed tuberculous focus in the lungs of a leukæmic individual. A case of splenic-myelogenous type by Weidner[3] may have been tuberculous also.

What the influence of each disease upon the other may have been in our case is not easily determined. The two diseases seemed to have periods of activity and quiescence, with the leukæmia most prominent at the time of death, but we cannot say what their relations were except from the history, until three months prior to death. It may, indeed, have been an instance of pseudo-leukæmia gradually transformed into leukæmia, as the cases of Martin and Mathewson[4] and those referred to by Cabot[5] may have been, though the latter regards these as rare.

The comparative frequency of so-called pseudo-leukæmia combined with tuberculosis, with the latter disease as the suggestive cause of the lymphatic hypertrophy, argues our case to have been such an instance in its beginning.[7] [12]

The history indicates that the lymphatic enlargements developed simultaneously with the tuberculosis, while section of numerous lymph-nodes failed to indicate the slightest old or recent tuberculosis in them. However that may have been, the first blood examination was unfortunately not made until two months before death, when the enormous number of small lymphocytes established the leukæmic nature of the lymphatic hyperplasia, and the great excess (98 to 99 per cent.) of small lymphocytes at once placed it in the class of lymphatic leukæmias.

Which disease was primary? This is also difficult to decide from the history, since the symptoms of both seemed to develop immediately after an acute tonsillitis in March, 1895. There certainly is greater probability that the tuberculosis existed prior to that time. Unfortunately no microscopical examination was made of the tonsils after their removal in 1895, and one can only speculate as to their being tuberculous.

Negative results were obtained from cultures from the blood during life, and from the spleen, lymph-nodes, liver, and blood-clots in the heart after death.[13] [21] [30] Consequently nothing was learned in this manner pointing to an infectious origin of the leukæmia.

Attention may be called to the diminution in size of the superficial lymph-nodes, and probably the deeper ones and spleen during the last months of life, and also the enormous number of leucocytes during the final illness. The former change is mentioned as occurring in several instances referred to by Cabot[5] and Kovacs[22] in leukæmias complicated by acute diseases, also those of Nash[24] and Fränkel.[27] The white cells also diminished in these cases, except in one complicated by grippe pneumonia (Müller[23]). There was apparently no qualitative change in the leucocytes during the last days in our case.

The uric acid in three determinations in our case was markedly increased, but no attempt was made to note the relationship existing between the leucocyte-count and the excretion of uric acid.[25] [29]

With the Ehrlich-Biondi differential staining it was found that very few myelocytes were present, indicating that the marrow was little involved in the morbid process. No nucleated red cells nor "mast-cells" were recognized at any time.

History. A. C. A., aged forty-seven years, American, born in Binghamton, N. Y.; married; machinist; admitted to the Adirondack Cottage Sanitarium on June 8, 1895.

Family History. His father died of chronic tuberculosis ten years ago, at the age of seventy-three years. His mother died forty-two years ago, of the same disease, at the age of thirty-four years. Five maternal aunts and uncles died of tuberculosis. Five brothers and sisters are living and healthy (one half-brother and one half-sister).

Personal History. He had scarlatina, measles, and whooping-cough in childhood; nasal catarrh many years; gonorrhœa at eighteen; he denies syphilis and malaria. He married in 1886; his wife is healthy; there have been three children, of whom one died of pneumonia, aged ten months, and the others are healthy. He has used alcohol and tobacco in moderation.

Present Illness. The patient became debilitated in the summer of 1894 by confinement in an engine-room. A companion, who expectorated on the floor, afterward died of tuberculosis. In March, 1895, he had acute tonsillitis and "grippe," which is described by the attending physician, Dr. S. A. Twinch, of Newark, N. J., who kindly writes as follows: "In March, 1895, I was called to see A. C. A., I found him with what I took to be tonsillitis. After a few days the pain and difficulty in swallowing subsided, but some fever remained, and the swelling in the tonsils did not decrease. It was at this time that the glandular structures of the neck began to swell. I now noticed for the first time dulness on percussion at the apex of one lung, with harsh respiration and some râles. Shortly after this I took the patient to Dr. Eagleton, of this city, who removed either one or both tonsils. These specimens were not examined microscopically, but on gross examination they were very hard and dense to the touch. The swollen condition of the glandular structures of the neck remained throughout the time I had the patient under my care. In looking back upon the case I regard it as tubercular from the first. I do not think he had an attack of grippe."

In the following May the patient had a slight hæmoptysis, four weeks before admission to the sanitarium.

Status Præsens (June 11, 1895). There is the appearance of moderate anæmia; he has a blonde complexion; his weight is 122¾ pounds, eighteen pounds below the normal; his height 5 feet 3 inches. There is slight debility; the temperature is normal; the pulse 88; there is slight cough and expectoration; no tubercle bacilli were found in three slides; no chills nor sweats; appetite and digestion good.

Physical Examination. Cervical lymph-nodes enlarged; heart-sounds normal.

Lungs. There are bronchial voice and breathing and coarse râles at the right and left apex front and back, and a friction-rub in right infra-axillary space.

The larynx is normal.

August 25, 1895. Weight 131¾ pounds. Cough and expectoration slight. Temperature normal; fewer râles in chest.

February 26, 1896. Weight 134¾ pounds. Pulse 80; temperature normal. Respiratory sounds nearly dry except at the right apex.

During the past year the lymph-nodes in the right axilla have become enlarged to the size of marbles; then the left axillary and the right and left inguinal. None at present enlarged except the cervical.

Treatment. Arsenic and cod-liver oil.

Discharged May 9, 1896. Tuberculosis arrested.

September 24, 1897. Patient has lived in town since his discharge from the sanitarium, and continued in a fair degree of health until the past spring. Since July he has had diarrhœa, two stools daily; also sweats, and a temperature of from 99° to 99.5° F. and occasionally higher. His cough and expectoration have increased. He complains of weakness of vision in the right eye and of deafness. There has been no epistaxis and no priapism.

Status Præsens. Conjunctivæ quite pale; prominent temporal arteries; arcus senilis marked; general condition weak; gastric digestion fair; expectoration moderate and of muco-purulent character; bacilli found in small numbers; voice husky. There is a fulness in the neck, axillæ, abdomen, and groins. The thorax is broadened at its base. The urine contains no albumin, casts, or sugar. Ophthalmoscopic examination reveals numerous dark spots, resembling pigment, on the right retina. Impacted cerumen is found in the right ear, but both drums are normal. Tonsils, faucial pillars, and pharyngeal mucosa are much hypertrophied, and posterior nares obstructed by adenoids. There is no ulceration; the lingual tonsils are enormously enlarged, and there is much hyperplasia of all the laryngeal mucosa, with possibly ulceration in interarytenoid space.

Lungs. Dulness at both apices. Right apex: broncho-cavernous breathing; few râles. Left apex: dry, broncho-cavernous breathing in the suprascapular space behind. The heart-sounds are normal; the apex beat is at the nipple, being evidently pushed up by enlarged spleen and liver.

Spleen. The line of dulness extends 9 c.cm. from the edge of the ribs toward the umbilicus, and from the sixth rib downward to the left iliac fossa.

The lower part of abdomen is dull, possibly some ascites.

Liver. The edge is felt, being continuous with splenic dulness and extending across the abdomen 9 c.cm. from edge of ribs on the right toward the umbilicus.

The blood examination reveals leucocytes in enormous number, consisting principally of small lymphocytes. (See tables for relative numbers and differential counts.)

After September the patient continued in poor condition, and was very weak, until, on November 28th, he took a severe cold, which resulted in a bad bronchitis with profuse expectoration. His temperature varied from 100° to 103° F., while during October it had rarely reached 99.5° F. The sputum examinations several times revealed no tubercle bacilli. The excessive cough and cardiac weakness finally induced œdema, and exhaustion caused death on December 10, 1897. For some weeks preceding death the lymph-nodes, in all palpable situations, appreciably diminished in size, and the line of dulness made out in the abdomen on September 24th was decidedly changed on the left side at the time of death, owing apparently to the shrinkage of the spleen.

Date.	Leucocytes.	Red corpuscles.	
October 1, 1897	695,000	3,010,000	1 to 4⅓
November 20, "	710,000	3,190,000	1 " 4½
December 1, "	1,113,000	2,924,500	1 " 2⅗
" 4, "	1,104,000	2,666,000	1 " 2⅖
" 6, "	943,550	2,608,950	1 " 2¾
" 9, "	959,500	2,435,500	1 " 2½

	Oct. 1.		Nov. 20.		Dec. 1.		Dec. 4.		Dec. 6.		Dec. 9.	
	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.	No.	P'r ct.
Lymphocytes,	4907	98.14	4944	98.88	4919	98.38	4941	98.82	4947	98.94	4968	99.36
Polymorphous neutrophiles	23	0.46	25	0.5	44	0.88	43	0.86	36	0.72	14	0.28
Lr'ge mononuc. & transitional	46	0.92	19	0.38	11	0.22	12	0.24	11	0.22	15	0.3
Eosinophiles	0	0	0	0	1	0.02	0	0	0	0	0	0
Myelocytes	24	0.48	12	0.24	25	0.5	4	0.08	6	0.12	3	0.06
Total	5000	100.00	5000	100.00	5000	100.00	5000	100.00	5000	100.00	5000	100.00

Urinalysis. Albumin and sugar absent. No casts after centrifugation. Calcium oxalate in abundance; amorphous urates; leucocytes. Sediment stained for tubercle bacilli, with negative result.

Date.	Quant. 24 hrs.	Urea.	Uric acid.
September 24, 1897	780 c.c.	23.4 gms.	1.964 gms.
October 22, "	1300 "	23.4 "	2.075 "
December 9, "	1170 "	36.27 "	2.772 "

The feces were examined for tubercle bacilli, with negative result.

Autopsy (fourteen hours after death). Rigor mortis fully developed; œdema of lower extremities; superficial lymph-nodes not so prominent as during life, but on palpation all found markedly enlarged and of firm consistence; no fluctuation can be detected, and they are all movable.

Abdomen. Upon incision no fluid is found in the cavity; no tubercles on peritoneal surfaces; enlarged liver presents, occupying a large part of the abdomen. The omentum is studded with enlarged lymph-nodes, and is adherent to the abdominal wall in several places. The inguinal chains of lymph-nodes are seen much enlarged on both sides. There is no caseation on section.

The left kidney is lobulated and enlarged; weight, 270 grammes. Metastatic lymph-node is seen in its cortex the size of a pea. Capsule not adherent; cortex thickened and rather pale; it contains several small cysts and caseous spots. The lymph-nodes near the pelvis are enlarged. The right kidney is about the usual size, and appears normal in other respects. Both suprarenal capsules are soft, not enlarged, and appear normal.

Mesenteric and retroperitoneal lymph-nodes enormously hypertrophied, varying in size from that of a chestnut to that of a hen's egg, in places so bound together as to form large, irregular masses. Numerous sections reveal only soft, hyperæmic lymphoid tissue, without suggestion of caseation or fibrous cicatrices due to tuberculosis.

The urinary bladder contains about 120 c.c. (℥iv) of pale urine; the mucous membrane is normal. Prostate normal. Common iliac arteries have calcareous patches. The stomach is normal; it contains no food. The duodenum is apparently normal, though there is some redness of the mucosa, probably from passive congestion; no ulceration; the common bile-duct is patent. The ileum has a congested mucosa. Peyer's patches rather prominent; vermiform appendix normal; contains small amount of feces. The colon has a congested mucosa, and is covered with mucus, suggesting a mild colitis. There is no ulceration.

Liver. The right lobe fills a large part of the right hypochondrium and lumbar region, while the left is enlarged in the same proportion, extending well into the left hypochondrium. The edge of the organ is 9 c.cm. from the margin of the ribs on the right toward the umbilicus, and 10 c.cm. downward in the median line from the ensiform cartilage. The external surface is rather pale and glistening; no adhesions, Weight, 2720 grammes; greatest width, 28 c.cm.; greatest length, 22.5 c.cm.; greatest thickness, 11 c.cm. The cut surface is pale, with lobules distinct.

The gall-bladder is normal.

The spleen is considerably enlarged and firmly adherent to the diaphragm and abdominal wall. It extends 1 c.cm. below the free margin of the ribs. Its capsule is much thickened, giving the impression of a long-standing perisplenitis. Weight, 900 grammes; greatest length, 21 c.cm.; greatest breadth, 16 c.cm.; greatest thickness, 8 c.cm. The external surface is mottled, dark-red, and in places white from the thickened capsule. The cut surface reveals hypertrophied trabeculæ; firm consistence; hyperæmia and a few small infarctions.

The pancreas is apparently normal.

The diaphragm reaches to the third intercostal space on both sides.

Thorax. The cartilages are ossified, but the ribs are rather soft and cut easily; their marrow seems to be slightly more fluid than usual.

Heart. The normal amount of pericardial fluid is present; the position of the heart is considerably higher in the thorax than normal, due to enlargement of the liver and spleen. Both auricles and ventricles are distended by light-colored clots; there is moderate dilatation of the right auricle. Wall of the left ventricle is 1.5 c.cm. thick; wall of the right ventricle 0.04 mm. thick. The heart valves are normal. Weight of heart, 270 grammes.

Right Lung. There are general adhesions of the anterior surface and apex; base free; the parietal pleura is much thickened; 250 c.cm. of light-colored fluid in the pleural cavity; several small cavities, averaging 1 c.cm. in diameter, with caseous walls in the upper lobe; caseous spots disseminated throughout lung; œdema and hypostatic congestion of lower lobes.

Left Lung. Adhesions at apex; cavity about 2 c.cm. in diameter, containing some caseous material at the posterior aspect of the apex. Tubercles disseminated throughout the upper lobe; lower lobe œdematous, but free from tubercles and adhesions. No recent miliary-like tubercles seen in either lung; moderate pigmentation of both lungs. Bronchi not dilated; mucosa hyperæmic and covered with abundant muco-pus. Bronchial and mediastinal nodes very large, varying in size from a chestnut to a hen's egg; soft and elastic to the touch, and on numerous sections revealing hyperæmia, but no fibrous changes or caseation.

Thymus gland not found. Cervical and supraclavicular nodes, brain and spinal cord not examined, as permission was not obtained.

Microscopical Examination. Tissues hardened in 4 per cent. formalin; some in alcohol.

Liver. Capsules slightly thickened with layers of lymphoid cells directly beneath and extending downward between the lobules to a considerable distance. Large collections of these cells are to be seen in the interlobular spaces, while the capillaries and lymph-spaces are everywhere distended with lymphocytes. The cells of the parenchyma are much atrophied by pressure, and many contain particles of pigment. Branches of the hepatic, and particularly those of the portal vein, are filled and surrounded by lymphocytes in the perivascular spaces. Nothing suggesting tuberculous infiltration to be seen. The bile-ducts are empty and the epithelium is normal.

Spleen. Capsule very much thickened. Pulp consists of a dense mass of lymphoid cells. Trabeculæ in some places hypertrophied, in others they seem to have entirely disappeared. Malpighian corpuscles very few in number, and show atrophy, with fibroid changes. Pigmentation of the layer of cells just beneath the capsule.

Pancreas. Capillaries and lymph-spaces everywhere filled with lymphoid cells, as in other organs. The gland epithelium replaced in many cases by masses of lymphoid cells.

Kidneys. Capsule is apparently normal, great number of lymphocytes infiltrating all parts of the organ in the interstitial spaces. The capillaries and Malpighian tufts are distended with lymphocytes. Epithelium of the tubules somewhat swollen and granular.

Lymph-nodes consist of dense masses of lymphoid cells. The trabeculæ seem to have almost entirely disappeared. No fibrous changes or areas of necrosis can be made out.

Intestine. Sections near Peyer's patch; villi stand out prominently. The central chyle vessels and their capillaries are distended with the same round-cells seen in all other sections; lymph-follicles are quite prominent, and the collections of lymphoid cells are to be seen in the muscular layer; tubercles not recognized.

Lung. Sections through consolidated lung show old, fibrous tubercles, with intervening healthy tissue, the capillary walls standing out plainly with their contained lymphocytes.

The peribronchial spaces are much infiltrated with lymphocytes and fibrous tissue. No apparently recent tubercles are to be seen, and sections stained for tubercle bacilli did not reveal them so far as examined, which was not surprising, considering the chronic character of the tuberculosis. Specimens of bone-marrow of ribs were stained with Ehrlich-Biondi triple stain and with hæmatoxylon and eosin, and found to consist almost entirely of the small lymphoid cells, with large, round nuclei. The nuclei of many of them contained moderately coarse, deeply staining granules. Small cells with polymorphous nuclei and large cells, some with polymorphous nuclei and some with round nuclei, were present, but in relatively very small numbers.

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GASTROPTOSIS: REPORT OF A CASE IN WHICH A NEW OPERATION WAS UNDERTAKEN AND THE PATIENT GREATLY IMPROVED.

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The following case is an instance of enteroptosis, or Glenard's disease, in which there was downward displacement of the stomach, intestines, and right kidney. The patient was a young, unmarried woman. There was no history of traumatism, nor of illness, nor of abdominal distention by pregnancy or fluid effusion to explain the displacement of the organs. The cause, therefore, must be considered as most probably compression of the thorax by tight clothing and relaxation of the ligaments. There was not rapid emaciation. A first operation (nephrorrhaphy) was undertaken in the hope that the gastric symptoms would subside with relief of the renal displacement. There was decided improvement, but the distinctly gastric symptoms continued, and notwithstanding prolonged rest and careful diet no relief was obtained. At this time the late Dr. William Pepper, under whose care she was, and one of the writers who had immediate charge of her case, discussed the advisability of operative interference, unaware of the fact that operative treatment had been suggested and accomplished in a few cases. In this discussion the possibility of fully restoring the stomach was carefully considered, and the only sug-